



Pilot/Controller Coordinated Decision Making in the Next Generation Air Transportation System

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Introduction:

- NextGen technologies promises to enhance operations and improve safety in the US National Airspace System.
- Five of these NextGen technologies are:
 - ADS-B,
 - System-wide information management (SWIM)
 - Data communications
 - NextGen Network Enabled Weather (NNEW)
 - NAS Voice Switch
- Human factors evaluation in this study focuses on how pilot and controllers share information.
- We are particularly interested in the potential for breakdowns in coordinated decision making (Bearman, Paletz, Orasanu & Thomas, 2009).

Method:

- The five key technologies of NextGen were identified from FAA documents that specified critical components that need to be in place for NextGen to work effectively.
- A technical expert presented key aspects of the technologies to a panel of human factors experts
- The panel consisted of 4 experts in human factors who ranged from 6 to 26 years of experience.
- There were five panel group sessions in total (one technology per session), with each session lasting for approximately one hour.

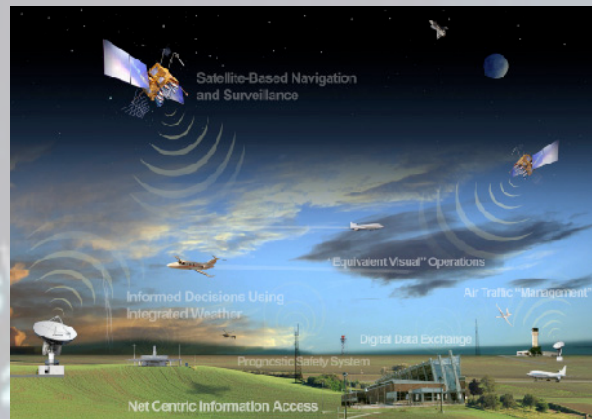
Results:

Issues that were identified were:

- Decision Making will not necessarily improve just because pilots and controllers possess the same information
- Having a common information source does not mean pilots and controllers are looking at the same information
- High levels of automation may lead to disconnects between the technology and pilots/controllers
- Common information sources may become the definitive source for information
- Overconfidence in the automation may lead to situations where appropriate breakdowns are not initiated

Discussion:

- Pilots and controllers need to be able to communicate information about their current mental model.
- Pilots and controllers should not assume that a common information source will always be the basis for decisions
- Pilots and controllers need to access information about the basis for a decision
- Pilots and controllers need to have the tools to appropriately deal with perturbations to the system
- New technology should be considered as a new team member who needs to communicate effectively and be clear about how they are functioning
- More research needs to be conducted as the technologies develop and are integrated into the flight deck and control rooms
- The current state of development of these technologies provides a good opportunity to utilize recommendations at an early stage



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